king aqueous extracts of our brown soils. The phenolsulfonic acid test for nitric acid is not applicable to such soils due to the interference of these pigment reactions. We were not satisfied with the results obtained in the experiments already given so we repeated them on a still larger scale, but with the same results which we consider as positively establishing the fact that the azotobacter do not nitrify but that the pigments which they form may give with phenolsulfonic acid, especially in very dilute solutions, a color reaction deceptively similar to that given by nitric acid and this reagent.

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NORTHERN LIGHTS IN SUMMER

I live at Nett Lake, Minnesota, 140 miles northwest of Duluth and 38 miles south of Fort Frances, Ontario, Canada. On the night of July 4 there was a fine display of northern lights (aurora borealis). It was as fine a display as is seen in this section even in the coldest months. There were spires and rolls of light and a bow of light which covered the whole northern sky and towards midnight reached nearly to the zenith.

ALBERT B. REAGAN
NETT LAKE, MINN.,
July 6, 1914

SCIENTIFIC BOOKS

The Cambridge Manuals of Science and Literature. Edited by P. GILES and A. C. SEWARD. New York, G. P. Putnam's Sons.

A review of the Cambridge Manuals appeared in SCIENCE of April 18, 1913; but since that date numerous additional volumes have come to hand, dealing with the most diverse topics. I give a list, with a few comments.

The Flea. By HAROLD RUSSELL.

When, some years ago, a member of the wealthy house of Rothschild took to collecting and describing fleas, there was a tendency to regard the circumstance in a humorous light, and perhaps even to enquire whether a man, to whom so many doors of opportunity were open, could not find something better to do. To-day, the connection between fleas and the plague having been established, Rothschild finds himself the greatest living authority on a subject of the highest importance to medical men, and no well-informed person has anything but praise for his work. The oriental rat-flea, the one mainly concerned in the spread of bubonic plague, was first made known to science by Rothschild, and the development of psyllology is illustrated by the collection of about a hundred thousand specimens at Tring.

Mr. Russell has had the advice of Mr. Charles Rothschild, and we may assume that his readable little book is up-to-date. It should be in the hands of medical men and the public generally, especially in regions where fleas are abundant. We would venture to suggest that if another edition appears the exceedingly crude text-figures should be replaced by better ones; that on page 81, in particular, is really scandalous.

Bees and Wasps. By O. H. LATTER.

This also is illustrated by very rough figures, without much pretence to accuracy in detail. The point of view is strictly British, but as many genera are common to Europe and America, the descriptions are more or less applicable to our species. The excellent accounts of the habits of English bees and wasps could scarcely at present be duplicated in this country, owing to the lack of observations. The work of the Peckhams on the solitary wasps, and that of various American observers on particular species of bees and wasps, is quite as good as anything done in Europe; but we still remain largely or wholly ignorant concerning the habits of many of our genera.

The Life Story of Insects. By G. H. CARPENTER.

This book is well illustrated, and the author has not hesitated to borrow many of his figures from American sources. The treatment of the subject is broad, and although the work has only 134 pages, Professor Carpenter manages to convey a great deal of information in an interesting way. This is, I think, the best brief introduction to entomology yet published.

Natural Sources of Energy. By A. H. GIBSON.

Figure 7 is a map of the world showing "regions subject to intense solar heat and with slight annual rainfall," including under this description nearly all of the western United States, even the Rocky Mountains of Colorado to their summits, and the coast of Oregon. Figure 8 is a similar map showing "regions suited for the maintenance of vegetable and plant life" (why vegetable *and* plant?). "Luxuriant vegetation shown in black;" a moderate amount in gray, and a minimum in white. The *whole* of the western United States, except tongue extending from the north through Montana, is pure white! We commend this especially to Californians, who have been under the delusion that their country supported some vegetation. Fig. 11 shows, in black, the "principal water powers of the world," and includes, in a large black area, the Rocky Mountains of Colorado and northward. How does it happen that this intensely hot region, with very little rain, and consequently next to no vegetation, is one of the principal areas where water-power may be obtained?

Submerged Forests. By CLEMENT REID.

Based on the brilliant original researches of the author, extending over many years, this discussion of the submerged forests on the coasts of the British Islands is equally fascinating to the botanist, geologist and anthropologist. It deals almost entirely with British work and phenomena, and has little to say about the labors of the Scandinavians and others in different parts of Europe. Thus, regarded as a general presentation of the matter, it seems narrow; but we can well forgive this in our appreciation of the intimate knowledge which the author has of his field, permitting him to speak with more assurance than would have been possible had he discussed the submerged forests of all Europe. For us in America the work carries many suggestions; thus we are surprised at the number of recognizable seeds obtainable from old peat deposits, permitting us to gain a fairly accurate knowledge of the herbaceous as well as woody flora of ancient times.

The Beautiful. By VERNON LEE.

An original treatment of the subject from a psychological point of view. This is, perhaps, a place where Bergson's contention that the intellect is not able to understand life strikes one with special force; but the author has no such misgivings, and proceeds to a logical and detailed analysis.

The Evolution of New Japan. By J. H. LONGFORD.

The interpretation of Japan is so difficult for an occidental that all books of this sort fall under suspicion; but Professor Longford was British Consul at Nagasaki, is now professor of Japanese in King's College, London, and is well known as a writer of works on Japan, so he has certainly won the right to be heard. The reviewer, having no critical knowledge of the subject whatever, read the little book with great pleasure, and can at least testify that it presents an exceedingly lucid account of the whole matter as the author understands it. There is here and there some evident inconsistency. Thus on page 3 we read, without qualification, that "the first emperor was Jimmu Tenno, who founded the Empire and ascended the throne in the year 660 B.C."; but on pages 17 and 143 we learn that this Jimmu is a pure myth. On page 81, the British government of 1894 receives severe censure for "sacrificing" the interests of British residents in Japan, but on page 84 we learn that as the result of the treaty thus condemned, trade "more than doubled in its volume," and the anticipated bad results did not occur.

The Wanderings of Animals. By H. GADOW.

Pearls. By W. J. DAKIN.

The Earth. By J. H. POYNTING.

The Fertility of the Soil. By E. J. RUSSELL.

The Atmosphere. By A. J. BERRY.

The Story of a Loaf of Bread. By T. B. WOOD.

The Physical Basis of Music. By A. WOOD.

The Peoples of India. By J. D. ANDERSON.

The Modern Warship. By E. L. ATTWOOD.

Naval Warfare. By J. R. THURSFIELD.

The Icelandic Sagas. By W. A. CRAIGIE.

A Grammar of English Heraldry. By W. H. ST. JOHN HOPE.

One great merit of these books is that they frequently call attention to neglected subjects, or cut familiar subjects at unfamiliar angles. Thus they should be instrumental in releasing us from the tyranny of the conventional textbook. We ought to have a similar series in America, dealing with subjects of special interest to us, and using American examples in illustration.

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UNIVERSITY OF COLORADO

The American College: What it is and What it may Become. By CHARLES F. THWING. New York, Platt & Peck Co. 1914.

President Thwing's "The American College" is a handsome book of 294 pages. Perhaps because the author had already published sixteen volumes in the same general field, the seventeenth gives the reader the impression of being thin in some spots and padded in others. The author must have either an extraordinary memory or an excellent bibliographical card index on academic subjects. At any rate, the quotations scattered through his book, if a little too numerous, are unhackneyed and interesting. His academic experience has been great and his sympathies are keen. There is little or nothing in the book with which one would disagree, and some of the sections are particularly good, as, for example, the discussion of woman's education and the frank confession of our present ignorance as to the differences between men's minds and women's. The book, as a whole, however, suffers from a lack of definite "attack" on the part of the author. It seems addressed to nobody in particular—or rather to different people at different times, students, parents, trustees, millionaires.

Possibly these matters have been discussed in some of the other books by the president of Western Reserve University, but so far as the present volume is concerned there is no mention of what seems to the reviewer to be really the most significant thing to-day—the rapid differentiation throughout the United States of the colleges that mean business from those that do not. There seems to be insufficient emphasis, also, on the need of developing a sense of individual responsibility on the part of the student, and on that most acute problem which faces every live college, that of distributing the new wine of the present vintage of thought with as little damage as possible to the bottles provided by the previous generation.

F. P. KEPPEL

SCIENTIFIC JOURNALS AND ARTICLES

THE contents of the September *Terrestrial Magnetism and Atmospheric Electricity* are as follows: "The Local Magnetic Constant and Its Variations," by L. A. Bauer; "Magnetic Declinations and Chart Corrections Observed on the *Carnegie* from Long Island Sound to Hammerfest, Norway, June to July, 1913," by L. A. Bauer and J. P. Ault; "The Atmospheric-Electric Observations made on the Second Cruise of the *Carnegie*," by C. W. Hewlett; "On Certain New Atmospheric-Electric Instruments and Methods," by W. F. G. Swann; Letters to Editor, Notes and Recent Publications.

SPECIAL ARTICLES

THE MEASUREMENT OF CHANGES IN THE RATE OF FECUNDITY OF THE INDIVIDUAL FOWL [1]

1. THE purpose of this preliminary note is to call attention to a method of measuring and representing graphically changes in the intensity of ovarian activity, as indicated by rate of ovulation in the domestic fowl. It has been fully established[2] that if one considers the egg production records from a group or flock of hens as a whole there are observable regular and distinct cycles in the production. Thus, we have distinguished in former publications between winter, spring and summer cycles of flock production. It has not hitherto been possible to observe precisely or to measure any such cyclical changes (either

[1] Papers from the Biological Laboratory of the Maine Agricultural Experiment Station, No. 70.

[2] *Cf.* Pearl, R., and Surface, F. M., "A Biometrical Egg Production in the Domestic Fowl." II. Seasonal Distribution of Egg Production. U. S. Dept. Agr. Bur. Anim. Ind. Bulletin 110, Part II., pp. 81–170, 1911.